



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/809,106 | 03/16/2001 | Hiroshi Yamada | 010283 | 8939 |

38834 7590 04/06/2004

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

| |
|----------|
| EXAMINER |
|----------|

TRUJILLO, JAMES K

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2116

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/809,106

Applicant(s)

YAMADA ET AL.

Examiner

James K. Trujillo

Art Unit

2116

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The office acknowledges the receipt of the following and placed of record in the file:

Priority papers dated 3/16/01 and Change of Address dated 12/18/03

2. Claims 1-9 are presented for examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgiou et al., U.S. Patent 5,940,785 (hereinafter Georgiou) in view of Kenny et al., U.S. Patent 5,287,292 (herein after Kenny).

5. As to claim 1, Georgiou substantially taught the information device, as per claim 1, having means for supplying power to a plurality of its component, the information device characterized by comprising a device having plurality of components (functional units) whereby each of the components are monitored and detect peak-power condition and peak-power terminating condition. Georgiou further taught that the components would switch power modes (clock frequency is reduced) according to the detection [col. 4 lines 16-50].

Georgiou does not expressly disclose the other limitations as per claim 1.

Kenny substantially taught the information device, as per claim 1, having means for supplying power to a plurality of its component, the information device characterized by comprising:

- a. access monitoring (indirect measuring of temperature by counting clock and external bus cycles) means for monitoring information on access to a predetermined single one component (CPU) [col. 1 line 65 through col. 2 line 16 and col. 2 line 56 through col. 3 lines 19], and for detecting peak-power generating condition (threshold value which is measure of peak power) and peak-power terminating condition (allowing the CPU to run hot again) for the component [col. 2 lines 37-55 and col. 5 line 65 through col. 6 line 8]; and
- b. power-mode changing means for switching mode of power (cooling trigger 407), to the predetermined single component from a normal-power mode to a power-saving mode (reducing the clock speed) according the detected information from said access monitoring means on said peak-power generating condition (when excess heat is detected), and for switching the power mode from said power-saving mode to said normal-power mode according to detected information from said access monitoring means on said peak-power terminating condition [col. 2 lines 37-55, col. 5 line 64 through col. 6 line 23, col. 9 lines 21-36 and figure 4].

In summary, Kenny teaches a system having a circuit that has monitors accesses to the circuit and accesses within the circuit. Kenny then uses a counter to determine a peak-power condition. If a threshold of the counter is reached a peak-power condition is determined and the

Art Unit: 2116

circuit will be forced to a power-saving mode (by reducing clocks). A peak-power terminating condition is then determined when the counter is below the threshold and the circuit is forced from the power-saving mode to the normal-power mode by increasing the clocks.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Georgiou by monitoring each of his components as taught by Kenny. It would have been obvious because Georgiou suggests that indirect measuring temperature using clock frequency using a frequency-based approach [col. 1 line 64 through col. 2 line 14]. Georgiou further teaches that his invention is not dependent upon using thermocouples. Furthermore, Kenny teaches that the access monitoring may be used as a substitute for the monitoring disclosed in Georgiou [col. 1 lines 47-64]. Specifically, Georgiou does not detail the implementation of the frequency-based approach. Kenny teaches using a frequency-bases approach by monitoring accesses. One of ordinary skill would have been motivated to modify Georgiou with the teachings of Kenny to implement the frequency-based approach. Further, Kenny teaches that his invention may be implemented in an integrated circuit already present in a system eliminating the need for the addition of thermocouples.

6. As to claim 4, Georgiou together with Kenny taught the information device according to claim 1 described above. Kenny further taught wherein said predetermined single one or a number of said components is a processor characterized in that said access monitoring means is configured for:

- a. finding use rate for the processor (determining what the temperature for operating conditions) [col. 2 lines 3-26, col. 3 lines 5-41 and col. 6 line 41 et seq.];

Art Unit: 2116

b. detecting as the peak-power generating (converted to a count) condition the use rate surpassing a set value (count is greater than a threshold value) [col.5 line 64 through col. 6 line 14];

detecting as the peak-power terminating condition the use rate dropping below a set value [col.5 line 64 through col. 6 line 14].

7. As to claims 5 and 8, Georgiou together with Kenny taught the claimed information device therefore they also teach the claimed method and the recording medium.

8. Claims 2-3, 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgiou et al., U.S. Patent 5,940,785 (hereinafter Georgiou) and Kenny et al., U.S. Patent 5,287,292 (herein after Kenny) as applied to claims 1, 5 and 8 accordingly and in further view Applicants Admitted Prior Art (AAPA).

9. As to claim 2, Georgiou together with Kenny taught the information device according to claim 1, described above. Kenny further teaches an access monitoring means configured for detecting issuance of bus activity indicating peak-power generating condition and detecting issuance of bus activity to end status as peak-power terminating condition as set forth hereinabove. Kenny discloses a circuit that is used to monitor accesses on a bus.

Georgiou and Kenny do not expressly teach wherein said component is an information storage device or that a read/write status is indicated during the occurrence of spin-up in the information storage device.

AAPA teaches a computer system that would be an environment that would use devices as taught by Georgiou and Kenny [pages 1-7]. The computer system of AAPA includes an

Art Unit: 2116

information storage device such as a hard disk drive for mass storage of data. An information storage device ordinarily has a circuit of its own to control read/write status. One of ordinary skill would also recognize that read/write status occur during spin up of such an information storage device. It would have been obvious to of ordinary skill in the art at the time of the invention to modify Georgiou and Kenny by implementing their teachings in a computer system of AAPA to monitor the read/write status to indicate the occurrence of a spin-up using the monitoring of the bus activity as taught by Kenny. Doing so would allow thermal management to be achieved when accessing the information storage device thereby reducing the heat in both the main CPU and information storage device.

10. As to claim 3, Georgiou together with Kenny taught the information device according to claim 1, described above. Georgiou and Kenny teach wherein one of the components is a processor (CPU). As set forth hereinabove Georgiou and Kenny taught wherein the processor switches from the normal-power mode to the power-saving mode and vice versa according to the detection.

Georgiou and Kenny do not expressly disclose wherein other components are an information storage device and liquid-crystal panel having a back light wherein the liquid crystal panel switches from the normal-power mode to the power-saving mode and vice versa according to the detection.

AAPA teaches a portable computer system that would be an environment that would use devices as taught by Georgiou and Kenny [pages 1-7]. The portable computer system of AAPA has an information storage device such as a hard disk drive for mass storage of data and has a liquid panel for a user interface.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the liquid crystal panel to switch from the normal-panel to the power-saving mode and vise versa according to the detection by the access monitoring means as taught by Georgiou and Kenny. Liquid crystal panels have a control circuit, usually a processor, dedicated to controlling information to and from the panel. One of ordinary skill in the art would have recognized that reduction in power and heat would be achieved by applying the teaching of Georgiou and Kenny to the control circuit of AAPA.

11. As to claims 2-3, 6-7 and 9 Georgiou together with Kenny and AAPA taught the claimed information device therefore they also teach the claimed method and the recording medium.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,535,798 to Bhatia et al. This patent teaches a system having a component with a clock and thermal management.

U.S. Pat. No. 6,158,012 to Watts, Jr. This patent teaches thermal management for a CPU using idle time.

U.S. Pat. No. 5,999,197 to Satoh et al. This patent teaches a system with a processor to control a display.

U.S. Pat. No. 5,838,891 to Mizuno et al. This patent teaches thermal management for an information storage devices.

U.S. Pat. No. 5,623,647 to Maitra. This patent teaches clock management for a CPU based on tasks.

U.S. Pat. No. 5,576,738 to Anwly et al. This patent teaches a system with a processor to control a display having an activity detector.

Art Unit: 2116

U.S. Pat. No. 5,557,551 to Craft. This patent teaches thermal management for circuit used in communication.

Japan Pat. No. 411296266 to Kaneto. This patent teaches thermal management for a portable electronic system.

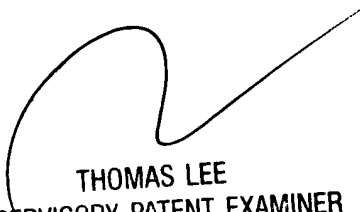
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James K. Trujillo whose telephone number is (703) 308-6291.

The examiner can normally be reached on M-F (7:30 am - 5:00 pm) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on (703) 305-9717. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James Trujillo
March 30, 2004



THOMAS LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100